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A BLUEPRINT FOR
MONITORING AND EVALUATION

WHY

WHAT

HOW

WHEN

WHO

WHERE

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PROLOGUE

This paper has been written to satisfy completion requirements for Clemson University's program on "Professional Development for the Outdoor Recreation Manager."

The author's appreciation and thanks go to John Heaton, Lance Tyler, Bev Driver, Glenn Haas, Paulette Cash, Don Patterson, Kevin Colby, Henry Salas, Leon Buist, and Chuck McConnell. Their advice and assistance in the development of this presentation contributed substantially to establishing the rationale and framework for the monitoring and evaluation step associated with the Arapaho and Roosevelt National Forest Planning effort.

INTRODUCTION

The implementation of the Arapaho and Roosevelt Land and Resource Management Plan will set in motion scheduled management prescriptions^{1/} on selected lands. With the application of each prescription, we will put to work several management practices, with established general direction and standards. Monitoring the application, effects, and outputs of these practices is essential to providing documentation required for future assessment and Forest plan revision.

How well have the goals and objectives been achieved? Stated in another way, have the "planned" benefits and products been provided? These questions point out the need for, and scope of, a monitoring and evaluation plan.

Accordingly, this chapter establishes the rationale for the plan and details a format for displaying minimum requirements necessary to meet our monitoring and evaluation responsibilities.

^{1/} Refer to Glossary of Terms, Appendix Exhibit III.

I. THE ELEMENTS OF MONITORING

First, a review of "WHY" monitoring and evaluation is a part of the Forest Plan is needed. The National Forest Management Act of 1976 mandates and establishes the framework for development and revision of Forest Plans. Subsequent regulations have established procedures and requirements that guide land and resource management planning.

As recognized and discussed in the laws and regulations, an essential ingredient of Forest planning is the monitoring and evaluation phase. This phase of the plan will show how well the plan objectives have been met and how closely management standards and guidelines have been applied. Specifically, the regulations stipulate that monitoring will be established to assure that management standards and guidelines preserve critical soils and watershed, fish, wildlife, recreation, and aesthetic values; maintain vegetative productivity; and reduce hazards from insects, disease, weed species, and fire.

Having established why monitoring is required, "WHAT" must be monitored is the next question. The Forest Plan rests on the development and application of management prescriptions and associated practices. It is prescriptions that determine the practices that will be implemented as a result of the Forest planning process. It is prescriptions that, when applied to the ground, produce the outputs and subsequent effects projected by the selected alternative of the Forest Plan. Accordingly, it is appropriate that prescriptions be monitored and evaluated.

There are three parameters of prescriptions to be monitored:

Application - Were the prescriptions applied to the ground as they are written in the Forest Plan?

Effects - What are the actual physical, biological, social, and economic effects that resulted from the application of the prescriptions?

Outputs - What are the economic outputs that have been produced by the prescriptions?

"HOW" to monitor prescriptions is the next logical question. A combination of five basic monitoring tools will be employed to monitor a prescription. The tools used on the Arapaho and Roosevelt National Forests will be recordkeeping, benchmarks, surveys, use of research, and management reviews. All of these tools are established techniques or management processes and, with organization and proper application, will provide the basis for an effective monitoring and evaluation plan.

Coordinated utilization of established recordkeeping and reporting systems is one of the tools and includes utilization of management attainment reports, timber harvest reports, recreation use reports, etc. They will be most useful in tracking the outputs and evaluating effects of the prescriptions. Existing and new resource benchmarks is the second tool required to meet minimum monitoring requirements. Benchmarks establish the baseline or reference point against which the effects of the prescription can be compared.

Other tools are needed as well. Public and participant surveys and interviews determine response to current land use management and track emerging public issues and concerns. National Forest research systems and administrative studies will be used when current technology gaps prevent the monitoring of essential effects or outputs and when the use of these approaches is economically justified. Finally, the management review system can be used to focus on management direction and controls in the application of approved management prescriptions.

"WHEN" is the next component of monitoring and evaluation. When will the data be collected? What will be the monitoring frequency, and when will the evaluation report be completed? Such monitoring and evaluation frequency and due dates will be established in the general requirements that apply to all prescriptions.^{2/} In addition, more detailed requirements will be included in the specific prescriptions.^{3/}

^{2/} Refer to Section II of this Report, General Monitoring and Evaluation Requirements.

^{3/} Refer to Appendix Exhibit #2, Monitoring Requirements for Prescription #21.

Finally, "WHO" monitors and "WHERE" is it to be accomplished. In some cases, the minimum monitoring requirements will state who and where. For instance, in the example of the Wilderness prescription, it is clear that monitoring visitor satisfaction must be conducted by the Wilderness Ranger at locations inside the transition area. In other instances, the District Ranger's annual monitoring plan (discussed in the next section) will dictate who will do the monitoring and where it will be done. It is, after all, the purpose of that action plan to detail how and where monitoring will be accomplished based on the approved budget and program of work.

II. GENERAL MONITORING AND EVALUATION REQUIREMENTS^{4/}

There are seven general monitoring requirements and five general evaluation requirements which apply to all management prescriptions. These requirements are:

1. Give monitoring emphasis to those prescriptions which produce the predominance of effects and outputs.^{5/}
2. The District Ranger will develop an annual monitoring plan which details how and where monitoring will be accomplished based on the approved budget and program of work.
3. Where monitoring benchmarks are to be installed, the District Ranger's annual monitoring action plan must relate in detail the technique, specific monitoring frequency, and how the data collected will be used in his evaluation report.

^{4/} Refer to Appendix: Exhibit V, Excerpt from Draft FSM 1920; and Exhibit VI, Excerpts from Regulations.

^{5/} Refer to Appendix, Exhibit 7, Determinant Matrix, Recreation Monitoring Reliability.

4. Utilize research and technology transfer or administrative studies when recognized technology gaps preclude required monitoring.
5. The specific prescription monitoring requirements must include descriptions of activities, practices, and effects that will be measured and the frequency of measurements. The emphasis is on specifying the level of detail desired.^{6/}
6. Expected precision and reliability of the monitoring process must be specified for each monitoring requirement.
7. The deadlines for evaluation reports must be specified in the prescription.

Evaluation reports will meet certain guidelines. There are five General Evaluation Requirements. The regulations state that an evaluation report will be prepared for management practices monitored and will contain at least the following:

1. A quantitative estimate of performance comparing outputs and services with those projected by the Forest Plan;
2. Documentation of measured effects, including any change in productivity of the land;
3. Recommendations for changes;
4. A list of needs for continuing evaluation of management systems and the alternative methods of management; and
5. Unit costs associated with carrying out the planned alternative as compared with unit costs estimated in the Forest Plan.

^{6/} Refer to Appendix Exhibit #2. Minimum Monitoring Requirements, Prescription #21.

LINK BETWEEN MANAGEMENT PRESCRIPTIONS AND MINIMUM MONITORING REQUIREMENTS

As previously stated, the implementation of the Forest Plan will set in motion scheduled management prescriptions on selected lands. The application of each prescription will put to work a group of management practices, each of which has established general direction and standards. Monitoring the application of standards and direction is essential to providing documentation required for future assessment and plan revision.

Management prescription number 21^{7/} details the monitoring requirements associated with the prescription. In order to illustrate how these requirements are tied to the management prescription standards, it is necessary to understand something of how the prescription was developed.

The Wilderness prescriptions used on the Arapaho and Roosevelt National Forests are based on a variety of social, physical, and biological inventory data, resulting in a series of management zones in the Wilderness. These zones provide a spectrum or range of Wilderness experience opportunities. Selection of the appropriate prescription for an area is based on a variety of information types which must be monitored and evaluated after the prescription is applied.

For example, the general management direction of Prescription #21 is to provide for a maximum level of recreation use emphasizing easily accessible day use activities consistent with basic Wilderness resource protection. The types of information needed to define what area is suitable for this prescription include: level of adjacent recreation development such as trailhead parking; level, pattern, and type of use; level of facilities development; type of use; evidence of nonconforming uses; and levels and types of human-caused impacts, including soil condition and trend,

^{7/} Refer to Appendix Exhibit #2, Minimum Monitoring Requirements, Prescription #21.

vegetation condition and trend, fuel loadings increased by past fire suppression, water quality, air quality, noise, visitor expectation and satisfaction, and public concerns for the area.

Monitoring these same types of information will be required to evaluate how closely the prescription has met its objective. Accordingly, Prescription #21 specifies standards for physical, biological, and social conditions that must be met in order to attain management objectives for the area. These standards and associated monitoring requirements are:

1. STANDARD: Soils may not be a downward trend. Trail tread width does not exceed design prism. No campsites in condition Class V. Soil loss in trail corridor is within natural limits except on tread. MONITORING REQUIREMENT: Measurements are made triennially on trail transects. Code-a-Site method is applied to all designated campsites annually and all closed sites for three years following application of Prescription #21.
2. STANDARD: Campsites in condition Class III or worse are closed and rehabilitated. Designated (managed) campsites or areas contain no sites in condition Class V. MONITORING REQUIREMENT: Annual rating and photo point documentation is conducted for designated sites. Indicator sites that are closed are evaluated annually for three years to estimate recovery needs. Code-a-Site is the appropriate monitoring tool, as modified by Frissell's rating scale.^{8/}
3. STANDARD: Water quality in Wilderness will not be degraded below the existing conditions, in accordance with State standards. MONITORING REQUIREMENT: Establish bacteriological, chemical, and physical benchmarks, or profiles for major streams and indicator lakes against which future studies can be compared to determine whether the standard is met.

^{8/} Refer to Appendix Exhibit 4, Bibliography.

4. STANDARD: Document ambient visual clarity to establish the benchmark for monitoring future changes resulting from management activities both inside and outside the Wilderness. MONITORING REQUIREMENT. Establishment of photo points and a photographic record of visual clarity is the benchmark monitoring tool.
5. STANDARD: The level of use standard for the transition management area is .083 - 2.500 PAOT/acre. Day use visitors make up 50 percent or more of all visits to this management area. MONITORING REQUIREMENT: Visitor use level and type of use is monitored annually, using accepted monitoring and evaluation systems such as trail registration, Wilderness permit computer analysis, and trail traffic counters.

CONCLUSION

This paper has presented the concepts and requirements associated with monitoring and evaluating the implementation of the Arapaho and Roosevelt National Forest Land and Resource Management Plan. The essential elements of the monitoring plan are summarized as follows:

1. The general monitoring and evaluation requirements will apply to all management prescriptions.
2. Each management prescription will display minimum monitoring requirements associated with the application of that prescription.
3. The District Ranger will prepare and submit to the Forest Supervisor an annual monitoring and evaluation plan that is based on the District's approved budget and program of work. This plan details how the general and specific prescription monitoring requirements will be accomplished.
4. Following the completion of the annual program of work, each District Ranger will prepare an evaluation report based on the general and

specific evaluation requirements. The District evaluation reports will be consolidated at the Forest level and become a part of the "documented forest monitoring and evaluation record."

5. These reports provide the basis for keeping the planning process a dynamic, responsive effort. Based on the evaluation reports, recommendations for changes in management direction are made.

The evaluations will be used as a basis for amending or revising the Plan, as necessary, to meet the goals and objectives of National Forest management.

A P P E N D I X

EXHIBIT I

MANAGEMENT PRESCRIPTIONS FOR WILDERNESS MANAGEMENT

- #21 - Transition Area
- #22 - Semi-Primitive Management Corridors
- #23 - Primitive Management Corridors
- #24 - Primitive Management Area
- #25 - Trailless Management Areas

PREScription 21

This prescription provides for transition management areas in Wilderness which emphasizes moderate wilderness use consistent with preserving biophysical wilderness resources near major developed recreation areas adjacent to the Wilderness.

This prescription applies to:

-Transition management areas which have high historic use levels and significant evidence of human use and occupation. Facilities and trails constructed for Level IV maintenance may be present in the area. Natural processes, particularly vegetation and the use of the area by wildlife shows substantial short term interruption. Non-conforming but accepted uses may be present. Opportunity for solitude and primitive recreation limited or absent.

PRACTICES	GENERAL DIRECTION	SPECIES-SPECIFIC DIRECTION
<u>PHYSICAL AND BIOLOGICAL WILDERNESS COMPONENT</u>		
SOILS G 3. Restore Productivity	Soils may currently be in a downward trend from past visitor use impacts associated with camping and heavy use. Likelihood of establishing an upward trend is limited but possible through intensive campsite management including rehabilitation. Camp sites in all condition classes that are not managed as designated sites will be rehabilitated to prevent erosion. Designated sites can be managed to condition Class IV where erosion is controlled. Soil disturbance resulting from trail construction and non-conforming use is rehabilitated for erosion control.	
AIR	In Mandatory Class I areas, visual air clarity objectives will be met by constraining forest management activities outside the Wilderness. In other wildernesses, state standards will be met or exceeded.	
WATER QUALITY L 6a. L 6e.	No change from existing conditions will be permitted in accordance with state standards.	

PREScription 21

PRACTICES	GENERAL DIRECTION	SPECIES-SPECIFIC DIRECTION																
VEGETATION	Vegetation trend is stabilized and an upward trend is established in areas where sources of degradation are controlled by the prescription. Range condition is generally "good" with limited areas (popular day use sites, designated campsites) in at least "fair" condition acceptable. Natural processes affected to some degree in terms of composition and species distribution.																	
WILDLIFE N 2e. N 2f. N 5c. & d.	Wildlife populations are not generally affected, although utilization of the area by wildlife may be limited due to sustained high use levels. Presence of big game species reduced during most of the visitor use season. Provide for T & E species.																	
FIRE B 2. Expanded Suppression B 1. Immediate Suppression	Permit natural fires to burn under prescription. Suppress man caused fires immediately.	Equipment and suppression tactics will be selected to minimize adverse effects on wilderness values.																
SOCIAL WILDERNESS COMPONENT																		
RECREATION	Management emphasizes day use and transit to other areas in the Wilderness through a generally unmodified natural environment. Limited opportunity for solitude and primitive recreation.																	
CAMPING M 1a. Restricted camping	Overnight camping not provided for except in designated sites or areas located so as to avoid conflict with day users.	<table><tr><td></td><td>Alpine</td><td>Forest</td><td>Meadow</td></tr><tr><td>Prohibit</td><td>x</td><td>x</td><td>x</td></tr><tr><td>or</td><td></td><td></td><td></td></tr><tr><td>Designate</td><td></td><td>x</td><td></td></tr></table>		Alpine	Forest	Meadow	Prohibit	x	x	x	or				Designate		x	
	Alpine	Forest	Meadow															
Prohibit	x	x	x															
or																		
Designate		x																
CAMPFIRES M 1c.	Campfires permitted only at designated campsites at which a fire grate is provided. VIS encourages use of stoves, dead and down (on the ground) material only may be burned where open fires are permitted in designated sites.	<table><tr><td></td><td>Alpine</td><td>Forest</td><td>Meadow</td></tr><tr><td>Prohibit</td><td>x</td><td>x</td><td>x</td></tr><tr><td>or</td><td></td><td></td><td></td></tr><tr><td>Designate</td><td></td><td>x</td><td></td></tr></table>		Alpine	Forest	Meadow	Prohibit	x	x	x	or				Designate		x	
	Alpine	Forest	Meadow															
Prohibit	x	x	x															
or																		
Designate		x																

PRACTICES	GENERAL DIRECTION	SPECIES-SPECIFIC DIRECTION								
DOGS/PETS M 1e. Restricted M 1g. Prohibited	Pets physically controlled. May be prohibited entirely under special circumstances, e.g. high user density, wildlife considerations, compatibility with adjacent management by other agencies. VIS encourages people to leave pets at home.	<table><tr><th></th><th>Alpine</th></tr><tr><td>Prohibit</td><td>x</td></tr><tr><td>or</td><td></td></tr><tr><td>Physical Control on Leash</td><td>x</td></tr></table>		Alpine	Prohibit	x	or		Physical Control on Leash	x
	Alpine									
Prohibit	x									
or										
Physical Control on Leash	x									
PARTY SIZE M 1h. Restricted	Maximum party size in Wilderness limited to 10 persons and 10 head of stock. Parties larger than 10 persons/10 head of stock may be allowed under permit but may not exceed 20 persons/25 head of stock. Permit will specify dates and travel routes. Parties larger than this maximum may be permitted with the Regional Forester's approval.									
LEVEL OF USE M 1. Information and Education Redistribution Reduce Access Limit Use	Inform visitors of alternate opportunities. Redistribute use within capacity limits. Reduce access to the wilderness and within the Wilderness. Limit use by permit/quota system.									
RECREATION LIVESTOCK M 2a. Prohibited Restricted	Pack and saddle stock generally prohibited except through travel may be permitted on designated trails.									
GRAZING E 3. Prohibited (Incidental)	The grazing and/or trailing of domestic livestock is prohibited except where no feasible alternative access to an allotment elsewhere in the Wilderness is available.									
TRANSPORTATION E 9. Trail Construction	Construction and reconstruction for Level III maintenance standard permitted on maximum 24" tread.	Clearance on designated horse trails maintained at 10' height and 8' width to horse use 7' height and 6' width.								

PRESCRIPTION 21

PRACTICES	GENERAL DIRECTION	SPECIES-SPECIFIC DIRECTION
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TRANSPORTATION CONT....

I 8. Trail Maintenance

Existing higher standard trails maintained as constructed. All trails maintained at Level III. (See Management Information Handbook).

M 3a. Bridge Construction

New bridges will not be constructed across streams which do not pose a safety hazard. Materials may include treated timber. Bridges are designed for horse use only on designated horse trails where no safe and feasible opportunity exists to construct a ford.

M 3c. Trailhead Facilities Trailhead Construction

Trailheads will be located outside the wilderness. Facilities provided will be compatible with the planned use level. Trailheads may provide extensive visitor information facilities to interpret the wilderness, and impart wilderness ethics to visitors.

SIGNING

M 4a. Install Maintain

Signs used for resource protection, at trail junctions facilitate public travel and safety. Signs made of untreated wood with routed letters.

FACILITIES/STRUCTURES

M 5a. Construction

Construct no administrative facilities/structures except toilets and firegrates if necessary for water quality protection. Remove existing abandoned structures, mining equipment, etc., unless of cultural or historic value.

LANDS

Outfitter-guide operations in this prescription are subject to the same restriction as the general public and as recreational livestock. In addition, there will generally be no camping permitted except in designated sites specified in outfitter-guide permits. Outfitter-guide activities are kept at all times harmonious with the activities of visitors who do not employ such services. Outfitter-guide operations are included in the overall level of use capacities.

PRACTICES

GENERAL DIRECTION

SPECIES-SPECIFIC DIRECTION

LANDS CONT....

- C 4a. Eliminate Special Use
- C 4b. Maintain Special Use

Eliminate special uses where feasible by non-renewal.
Maintain special use for non-conforming but accepted uses.

- C 4c. Issue Special Use
- C 1a. Acquire Lands

Issue special uses for research and scientific study.
Acquire private inholdings.

VISUALS

- K 1. Preservation

The area identified by the prescription will be managed for maximum retention of the natural landscape. All activities will be designed and implemented so that the impact of man is not apparent and the area appears in an untrammeled, natural succession condition.

Toilets will be located in areas that have screening capabilities that will blend structure into the natural scene. Building materials will be compatible with the natural line, color, form and textures. Fire grates will be constructed of native rock.

PREScription 22

This prescription provides for semi-primitive management corridors in Wilderness as predominantly unmodified natural environments. The concentration of visitors is low, but there may be evidence of other visitors in the area, with a low to moderate number of contacts with other groups.

This prescription applies to moderately to heavily used trail corridors in the Wilderness with historic use levels of more than 3-5 thousand visits annually and past trail maintenance standards of from Level II to Level III. Natural processes are affected to some degree by sustained moderate-high use levels. Wildlife may avoid areas of use. Impacts of past recreation and other human use are evident in the form of camp areas, the trail corridor, and abandoned structures and facilities.

PRACTICES	GENERAL DIRECTION	SPECIES-SPECIFIC DIRECTION
<u>PHYSICAL BIOLOGICAL WILDERNESS COMPONENT</u>		
<u>SOILS</u>		
G 3. Restore Productivity	Soils are not in a downward trend over most of the area but the likelihood of establishing an upward trend is limited by planned use levels. Soil protection on the immediate trail corridor is provided for by a higher maintenance standard including bridge construction. Campsite impacts may be evident in the trail corridor and at destination sites. Sites in condition class IV may be maintained as designated sites if erosion is controlled. Condition class V sites are closed and rehabilitated. Undesignated sites in condition class I-III are permitted to continue in use. Soil disturbances resulting from trail construction, reconstruction and abandoned or current special uses are stabilized and rehabilitated.	
AIR	In Mandatory Class I areas, visual air clarity objectives will be met by constraining forest management activities outside the Wilderness. In other wildernesses, state standards will be met or	

PRACTICES	GENERAL DIRECTION	SPECIES-SPECIFIC DIRECTION
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WATER QUALITY
L 6a.
L 6e.

No change from existing conditions will be permitted in accordance with state standards.

VEGETATION

Vegetation trend is stabilized but an upward trend is unlikely. Range condition is generally "good" with limited areas of "fair" condition acceptable in areas of user concentration. Natural processes generally not affected over most of area.

WILDLIFE
N 2e.
N 2f.
N 5c. & d.

Wildlife populations and species distribution are affected on a short term basis by high use levels, but evidence no long term effect. Presence of wildlife, particularly big game species, may be limited at times by high use. Provide for T & E species.

FIRE
B 2. Expanded Suppression
B 1. Immediate Suppression

Permit natural fires to burn under prescription. Suppress man caused fires immediately.

Equipment and suppression tactics will be selected to minimize adverse effects on wilderness values.

SOCIAL WILDERNESS COMPONENT

RECREATION

Good opportunities to experience predominantly unmodified natural ecosystems, isolation, solitude, independence, self-reliance, with a moderate to high degree of challenge and risk.

CAMPING
M 1a. Prohibited
Restricted

Overnight camping is permitted in forested areas, but is prohibited in alpine and meadow areas. Camping is also prohibited within 100 feet of trails and 300 feet of lakes. Campsites may be designated in the alpine, meadows and around lakes.

	Alpine	Forest	Meadows
Prohibited Entirely	x		x
Prohibited except at designated sites	x	x	x
Prohibited within 300' of lakes		x	
Prohibited within 100' of trails		x	

PREScription 22

PRACTICES

CAMPING CONT....

GENERAL DIRECTION

Visitors are asked to camp away from streams and to utilize low impact camping techniques so as to leave no trace of their passing. No campsite improvements are provided.

SPECIES-SPECIFIC DIRECTION

CAMPFIRES

M 1c. Prohibited

Campfires are prohibited in alpine and meadow areas and within 300 feet of lakes and 100 feet of trails.

Visitors are requested to build low impact campfires and to build them at least 100' from streams. The use of wood material that is both dead and down is encouraged as is the use of self contained stoves.

	Alpine	Forest	Meadows
Prohibit within 300' of lakes		x	
Prohibit within 100' of trails		x	
Prohibit entirely	x		x

DOGS

M 1g. Prohibited

M 1e. Restricted

Dogs are required to be on leash when within 300 feet of lakes and 100 feet of trails. Dogs may be prohibited entirely under special circumstances. Visitors are encouraged to leave their pets at home.

PARTY SIZE

M 1h. Restricted

Maximum party size is limited to 10 people and 10 head of stock. Parties larger than this may be allowed under permit, but these will not exceed 20 people and 25 animals. Permit will specify dates, travel routes, and campsites. Parties larger than the maximum may be permitted with Regional Forester's approval.

LEVEL OF USE

M 1i. Inform of alternative areas
Reduce access
Limit use

The number of visitors is managed to provide opportunities for isolation, solitude, with low to moderate contact with other groups or individuals. Established capacities are not exceeded on more than 20 days/year. Maximum desirable encounters with other groups range between 8 and 10 encounters per day, depending on the individual wilderness.

	Alpine	Forest	Meadows
9-11 POAT per mile of trail		x	
2-3 POAT per mile of trail	x		x

PRACTICES	GENERAL DIRECTION	SPECIES-SPECIFIC DIRECTION
LEVEL OF USE CONT....	Visitor use is limited to established capacities by informing visitors of alternative opportunities outside the Wilderness, by reducing access within and to the Wilderness, and by instituting a permit system. A permit system may be utilized to maintain current use levels, to alter use patterns, or to reduce restrictions on visitors within the Wilderness.	
RECREATION LIVESTOCK M 2a. Restricted	Recreation livestock are prohibited within 300 feet of lakes and 100 feet of streams except for watering and through travel on designated routes. Pack and saddle stock may be prohibited on some trails which are not maintained for horse use. Recreational livestock may be prohibited overnight in the alpine and recreational livestock grazing may also be prohibited in the alpine. They are required to carry cubed, pelleted, or rolled feed. Hobbling, tying or picketing of animals is prohibited except in designated sites. In areas where horse use is causing physical or biological degradation or is creating undesirable non-system trails, pack and saddle stock are prohibited.	
GRAZING E 1. Extensive Grazing E 2. Intensive Grazing	This prescription does not place any restrictions on domestic livestock grazing beyond that required by the Allotment Management Plan.	
LANDS	Outfitter-guide operations in this prescription are subject to the same restriction as the general public and as recreational livestock. In addition, there will generally be no camping permitted except in designated sites specified in outfitter-guide permits. Outfitter-guide activities are kept at all times harmonious with the activities of visitors who do not employ such services. Outfitter-guide operations are included in the overall level of use capacities.	
C 4a. Eliminate Special Use C 4b. Maintain Special Use C 4c. Issue Special Use C 1a. Acquire Lands	Eliminate special uses where feasible by non-renewal. Maintain special use for non-conforming but accepted uses. Issue special uses for research and scientific study. Acquire private inholdings.	

PREScription 22

PRACTICES	GENERAL DIRECTION	SPECIES-SPECIFIC DIRECTION
TRANSPORTATION		
I 8. Trail Construction	Only trails maintained at Level II are constructed (see Management Information Handbook).	
I 9. Trail Maintenance		
M 3a. Bridge Construction	Bridges may be provided for crossing during the primary season of public use where the stream cannot be safely negotiated afoot or forded by horses.	
M 3c. Trailhead Facilities	The only trailhead facilities provided for Level II trails are trailhead information centers, minimal signing, off road parking for a maximum of 25 vehicles per trail. Horse facilities are provided at trailheads where horse use is permitted on the trail.	
M 4a. Install/Maintain Signs	Trail junction signs with trail names and trail numbers and resource protection signs are provided where necessary. Designated campsites are marked. Signs are of untreated wood with routed letters.	
FACILITIES		
M 5c.	Only bridges, trails, and other facilities, structures or non-conforming activities permitted for special uses such as prospecting, mining, grazing or water resource development are provided.	
M 5b.		
VISUALS		
K 1. Preservation	The area identified by the prescription will be managed for maximum retention of the natural landscape. All activities will be designed and implemented so that the impact of man is not apparent and the area appears in an untrammeled, natural succession condition.	

PRESCRIPTION 23

This prescription provides for primitive management corridors in Wilderness as essentially unmodified natural environments. The concentration of users is very low and dispersed to minimize contacts with other visitors.

This prescription applies to areas in Wilderness generally 600' either side of "primitive" Forest System trails that are maintained at Level I (Management Information Handbook) and which have historic low to moderate use levels of up to 5000 visitors per year. These areas show some evidence of recreation use impacts along the trail corridor and destination attraction areas, although ecologic processes are essentially unimpaired except on the trail itself. There may be some evidence of non-conforming but accepted uses and evidence of past human use such as reservoirs, old cabins, sawmill sites, etc. Soil disturbances are generally limited to past activities and past trail construction.

PRACTICES	GENERAL DIRECTION	SPECIES-SPECIFIC DIRECTION
<u>PHYSICAL-BIOLOGICAL WILDERNESS COMPONENTS</u>		
SOILS		
G 3. Restore Productivity	Soils generally not in a downward trend. Erosion sources are limited to the immediate trail corridor and are corrected by waterbarring, relocation or reconstruction of the existing trail. Soil disturbances caused by past mining, camping, etc. are rehabilitated to restore natural ecologic processes.	
	Campsites in condition class IV may be permitted as designated sites where soil erosion can be corrected, as a means of avoiding creation of new areas of disturbance. Campsites other than designated sites that are in condition class IV will be closed to use and rehabilitated.	
AIR	In Mandatory Class I areas, visual air clarity objectives will not be met by constraining forest management activities outside the Wilderness. In other wildernesses state standards will be met or exceeded.	
WATER QUALITY		
L 6a.	No change from existing conditions will be permitted in accordance with state standards.	
L 6e.		

PRESCRIPTION 23

PRACTICES	GENERAL DIRECTION	SPECIES-SPECIFIC DIRECTION
VEGETATION	Range conditions will not be in a downward trend and natural species distribution and composition remains unaffected except in designated campsites and the immediate trail corridor. Utilization of forage by recreation livestock, wildlife, or human trampling, on vacated allotments, will not exceed 25%. Greater utilization is permitted on stocked allotments which may evidence some change in natural distribution and composition. On campsites other than designated sites, ground cover vegetation loss does not exceed 50%. Some unnatural pruning and disappearance of dead and down wood material is evident in popular camp areas but does not affect the operation of long term ecologic processes.	
WILDLIFE N 2e. N 2f. N 5c. & d.	Natural population levels and species distribution remain unaffected by human use. Disturbance of wildlife solitude occurs in some areas on peak use days but does not result in permanent displacement.	
FIRE B 1. Immediate Suppression B 2. Expanded Suppression	Suppress man caused fires immediately. Permit natural fires to burn under prescription.	Equipment and suppression tactics will be selected to minimize adverse effects on wilderness values.
<u>SOCIAL WILDERNESS COMPONENT</u>		
RECREATION	Management emphasizes opportunities for isolation, solitude, self-reliance, and challenge while traveling on primitive trails.	
CAMPING Prohibited M 1a. Restricted M 1b. Unrestricted	Overnight camping is prohibited within 100 feet of trails and within 300 feet of lakes, although designated sites may be established within that limit at which camping is permitted. Camping is prohibited on the alpine and meadows within this zone except at designated sites. Ask visitors to camp away from stream banks and to utilize low impact camping techniques so as to leave no trace of their passing.	

PRACTICES GENERAL DIRECTION SPECIES-SPECIFIC DIRECTION

PARTY SIZE
M 1h.

Maximum party size is limited to 10 people and 10 head of stock. Parties larger than this may be allowed under permit, but these will not exceed 20 people and 25 animals. Permit will specify dates, travel routes, and campsites. Parties larger than this maximum may be permitted with Regional Forester's approval.

CAMPFIRES

- Prohibited
- M 1c. Restricted
- M 1d. Unrestricted

Prohibit open campfires within 100 feet of trails and within 300 feet of lakes, in meadows and the alpine. Visitors are requested to build low impact campfires and to build them away from streams. The use of wood material which is both dead and down is encouraged as is the use of self contained stoves.

	Alpine	Montane	Foothills	Meadows
Prohibit Entirely	x			x
Prohibit Within 300' of Lakes		x	x	x
Prohibit Within 100' of Trails		x	x	x

DOGS/PETS

- M 1g. Prohibited
- M 1f. Unrestricted
- M 1e. Leashed

Visitors are encouraged to leave their pets at home. Dogs may be prohibited entirely under special circumstances. Dogs are not generally restricted. They may be required to be on leash when within 100 feet of trails.

LEVEL OF USE

- Unrestricted
- M 1f. Identify alternative areas
- Reduce Access
- Restricted
- Limit user numbers

Level of use is managed to provide high opportunity for isolation and solitude with minimum contact with other visitors. Established capacities are not exceeded on more than 20 days/year. Maximum desirable encounters with other groups range from 2 to 3 encounters per day.

	Alpine	Montane	Foothills	Meadows
2-3 PAOT per mile of trail		x	x	
0.5-1 PAOT per mile of trail	x			x

Visitor use kept within established capacities by informing visitors of alternative opportunities outside the Wilderness, by reducing access within and to the Wilderness, or by limiting use. A permit

PREScription 23

PRACTICES

GENERAL DIRECTION

SPECIES-SPECIFIC DIRECTION

LEVEL OF USE CONT....

system may be utilized to maintain current use levels, to alter use patterns, or to reduce restrictions on visitors within the Wilderness.

RECREATIONAL LIVESTOCK

M 2a. Restricted

Recreational livestock are prohibited within 300 feet of lakes and 100 feet of streams except for watering and through travel on designated trails. Pack and saddle stock may be prohibited on some trails which are not maintained for horse use. Recreational livestock are prohibited overnight in the alpine. Recreational livestock grazing is prohibited in the alpine. Owners camping overnight with pack and saddle stock are required to carry cubed, pelleted, or rolled feed. Horses will be tied or corralled - hobbles and picketing is prohibited. Pack and saddle stock are prohibited in areas where horse use is causing physical or biological degradation or is creating undesirable non-system trails.

GRAZING

E 1. Extensive Grazing

E 2. Intensive Grazing

This prescription places no restrictions on domestic livestock grazing beyond that required by the Grazing Allotment Management Plan.

LANDS

Outfitter-guide operations in this prescription are subject to the same restriction as the general public and as recreational livestock. In addition, there will generally be no camping permitted except in designated sites specified in outfitter-guide permits. Outfitter-guide activities are kept at all times harmonious with the activities of visitors who do not employ such services. Outfitter-guide operations are included in the overall level of use capacities.

C 4a. Eliminate Special Use

C 4b. Maintain Special Use

Eliminate special uses where feasible by non-renewal. Maintain special use for non-conforming but accepted uses.

C 4c. Issue Special Use

C 1a. Acquire Lands

Issue special uses for research and scientific study. Acquire private inholdings.

PRACTICES	GENERAL DIRECTION	SPECIES-SPECIFIC DIRECTION
TRANSPORTATION		
I 8. Trail Construction	Reconstruct trails only for Level I maintenance standard (see Management Information Handbook). Maintain trails at Level I.	
I 9. Trail Maintenance		
M 3b. Bridges	No bridges are provided. If stream crossings are required then footlogs are provided.	
M 3c. Trailhead Construction	Construct/maintain trailhead facilities provided for on Level I trails are trailhead information centers, minimal signing, and off-road parking of a maximum of 10 vehicles.	
Signs		
Installation		
M 4a. Maintenance	Trail junction signs with trail names and trail numbers only may be provided. Designated campsites are marked. Signs are untreated wood with routed letters.	
M 4b. Removal		
Facilities		
M 5c.	No facilities, structures, or non-conforming activities are permitted except as legally required or permitted for special uses such as prospecting, mining, grazing or water storage and transmission.	
M 5b.		
Visuals		
K 1. Preservation	The area identified by the prescription will be managed for maximum retention of the natural landscape. All activities will be designed and implemented so that the impact of man is not apparent and the area appears in an untrammeled, natural succession condition.	

PREScription 24

This prescription is designed to provide primitive management areas characterized by essentially unmodified natural environments and essentially free from evidence of man. This is designed to accommodate the majority of visitor use outside of trail corridors.

This prescription applies to areas in Wilderness that are characterized by moderate size and lack of direct trail access, although they are generally easily accessible and have had moderate recreation use in the past. The area is essentially unmodified, although there is some evidence of recreation use impacts at popular camp areas and non-Forest travel routes. Ecologic processes generally continue to function unimpaired except for effects of past fire suppression. The area may be in close proximity to heavily used areas and offsite evidence of human development may often be visible from these areas. Non-conforming but accepted uses may be evident in the area (old mines, reservoirs, etc.).

PRACTICES

GENERAL DIRECTION

SPECIES-SPECIFIC DIRECTION

PHYSICAL AND BIOLOGIC WILDERNESS COMPONENTS

SOILS

G 3. Restore Productivity

Soil condition is not in a downward trend. Soil disturbances are limited to abandoned and current mine dumps and surface facilities, existing dams, etc. Abandoned areas of disturbance will be rehabilitated to restore conditions for natural processes to continue. Campsites which are in a downward trend will be closed to use, or use will be limited on those sites. No sites exist which are in condition Class IV and V (Frissel 1978). Sites in condition Class III are permitted if erosion is not present. See draft R-2 standards and guidelines.

AIR

In Mandatory Class I wildernesses, no degradation of visual air clarity is permitted as measured against objectives and baseline study for the area. In other wildernesses, state standards are to be met or exceeded.

WATER QUALITY

L 6a.

L 6e.

No degradation from current conditions in accordance with state standards is permitted.

PRACTICES

GENERAL DIRECTION

SPECIES-SPECIFIC DIRECTION

VEGETATION

Range condition is not in a downward trend and is in at least "good" condition by standard range evaluation practices. Utilization (by recreation stock, wildlife, or human trampling) in vacated allotments is not to exceed 25%. Species distribution and density is essentially unchanged from natural condition.

In areas of human or livestock use, no exposed tree roots are allowed. Dead wood on live trees and collection of down wood may give an unnatural appearance in popular camp areas but does not affect long-term ecologic processes. Threatened or endangered plants are protected by redirection of use or by other restrictions, where necessary.

FIRE

- B 2. Expanded Suppression
- B 1. Immediate Suppression

Natural fires are permitted to burn under prescription. Man caused fires are suppressed immediately.

Equipment and suppression tactics will be selected to minimize adverse effects on wilderness values.

WILDLIFE

- M 2e.
- M 2f.
- M 5c. & d.

Wildlife populations and utilization of area unaffected by permitted uses and use levels. Fish stocking is of low priority in these areas and may be terminated by agreement with the Colorado Division of Wildlife. Provide for T & E species.

SOCIAL WILDERNESS COMPONENT

RECREATION

Opportunities are provided for exploring and experiencing considerable isolation, independence, closeness to nature, tranquility, solitude, and self-reliance through the application of primitive recreation skills in an environment that offers a high degree of challenge and risk.

CAMPING

- M 1b. Unrestricted
- M 1a. Restricted

Overnight camping is unrestricted except that camping may be prohibited within 300 feet of certain lakes.

In these cases, designated campsites may be provided within the 300 foot limit. Visitors are encouraged to camp away from all lakes and streams. They are also

PRESCRIPTION 24

PRACTICES	GENERAL DIRECTION	SPECIES-SPECIFIC DIRECTION
CAMPING CONT....	requested to utilize low impact camping techniques leaving little trace of their passing. Improvised campsite improvements are discouraged.	
CAMPFIRES		
M 1d. Unrestricted	The use of campfires is not restricted, however, visitors are encouraged to use stoves. Dead and down wood only may be used for open campfires. Minimum impact campfires are encouraged.	
M 1c. Restricted	Campfires may be prohibited within 300 feet of certain lakes where the impact of fire rings and firewood gathering is great.	
DOGS/PETS		
M 1f. Unrestricted	Dogs are unrestricted but owners are encouraged to keep their pets close by and under control. In areas of high wildlife values or where conflicts with dogs are great, dogs are prohibited or restricted.	
PARTY SIZE		
M 1h.	Maximum party size is limited to 10 people and 10 head of stock. Parties larger than this may be allowed under permit, but these will not exceed 20 people and 25 head of stock. Permit will specify dates, travel routes, and campsites. Parties larger than this maximum may be permitted with Regional Forester's approval.	
LEVEL OF USE		
M 1i. Inform of alternatives Reduce access Limit use	Management emphasizes a high opportunity for considerable isolation and solitude with minimum contact with other visitors. Established capacities are not exceeded on more than 20 days/year. Maximum desirable encounters with other groups range between one and two encounters per day depending on the individual wilderness.	Visitor use is limited to established capacities by informing visitors of alternative opportunities outside the wilderness, by reducing access within and to the wilderness, and by instituting a permit

PRACTICES	GENERAL DIRECTION	SPECIES-SPECIFIC DIRECTION
LEVEL OF USE CONT...	system. A permit system may be utilized to maintain current use levels, to alter use patterns, or to reduce restrictions on visitors within the wilderness.	
RECREATION LIVESTOCK		
M 2b. Unrestricted	Recreational livestock use is unrestricted except that certain lakes may be closed to pack and saddle stock within 300 feet of the shoreline except for purposes of watering or through travel. Visitors are encouraged to keep their stock at least 300 feet from streams as well. They are encouraged to carry cubed, pelleted, or rolled feed, and to hobble, tie or picket their animals in such a manner as to use forage to 25% or less so forage use is not evident to the casual user. In areas where horse use is causing physical or biological degradation or is creating undesirable non-system trails, pack and saddle stock are prohibited.	
M 2a. Restricted		
GRAZING		
E 2. Intensive Grazing	This prescription does not place any restrictions on domestic livestock grazing beyond that required by the Allotment Management Plan.	
E 1. Extensive Grazing		
LANDS		
	Outfitter-guide operations in this prescription are subject to the same restrictions as the general public and as recreational livestock. In addition, their camps may be restricted to designated campsites. Outfitter-guide operations are included in the overall level of use capacities.	
C 4a. Eliminate Special Use	Eliminate special uses where feasible by non-renewal. Maintain special use for non-conforming but accepted uses.	
C 4b. Maintain Special Use		
C 4c. Issue Special Use	Issue special uses for research and scientific study. Acquire private inholdings.	
C 1a. Acquire Lands		
TRANSPORTATION		
I 8. Trail Construction	This prescription is designed to provide opportunities for cross-country travel utilizing a high level of	

PREScription 24

PRACTICES

GENERAL DIRECTION

SPECIES-SPECIFIC DIRECTION

TRANSPORTATION CONT...

Trail Construction

woodsmanship and primitive recreation skills in an environment which offers a degree of risk and challenge. No trails are currently provided. Construction of new trails designed for Level I maintenance standard is permitted in forested areas to provide resource protection along non-Forest System travel routes receiving impacts from use. New construction is generally discouraged as a means of redistributing use.

SIGNS

M 4c.

No signs or route markers are provided. Visitors are discouraged from marking travel routes.

FACILITIES

M 5b.

M 5c.

No facilities, structures, or non-conforming activities are permitted except as legally required or permitted for special uses as prospecting, mining, grazing, or water storage and transmission.

VISUALS

K 1. Preservation

The area identified by this prescription will be managed for maximum retention of the natural landscape. All activities will be designed and implemented so that the impact of man is not apparent and the area appears in an untrammeled, natural succession condition.

PREScription 25

This prescription is designed to provide trailless management areas in wilderness that are managed to be as free as possible from the influences of man's activities except as a brief visitor.

Trailless areas in the Wilderness that are characterized by large size, remoteness, completely unhindered operation of natural ecologic process and lack of Forest System trails. These areas, by virtue of rugged topography or isolation from major access routes, have historically low use and virtually no evidence of past or present human use or occupation. Owing to these factors, the area is generally self-limiting to other than low use levels. Existing or abandoned evidence of non-conforming use is absent with the exception of grazing. Recreation use impacts from camping are not evident. Off site human development is generally not visible from within most of the area. Private inholdings are absent. Domestic livestock are absent.

PRACTICES	GENERAL DIRECTION	SPECIES-SPECIFIC DIRECTION
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PHYSICAL-BIOLOGICAL WILDERNESS COMPONENT		
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SOILS		
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G 3. Restore Productivity		
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	Soils remain unaffected by human use but may evidence natural erosive causes. Soils are not in a downward trend as a result of human activity. Management will not cause soil disturbances with the exception of suppression of non-prescription fires. Soil disturbance resulting from fire suppression will be rehabilitated. See R-2 Wilderness Management Standards and Guidelines (draft). No campsites in condition classes III - IV will be permitted. (Frisell 1978)	
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AIR		
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	In Mandatory Class I areas, visual air clarity objectives will be met by constraining forest management activities outside the Wilderness. In other wildernesses, state standards will be met or exceeded.	
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WATER QUALITY		
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L 6a.		
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L 6e.		
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	No change from existing conditions will be permitted in accordance with state standards.	
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VEGETATION		
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	Vegetation is not in a downward trend and in "excellent" condition. Trees in destination areas and presence of dead and down wood show little or no sign of human caused change. Loss of ground cover vegetation does not exceed 25% in campsites.	
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PREScription 25

PRACTICES

GENERAL DIRECTION

SPECIES-SPECIFIC DIRECTION

WILDLIFE

- N 2e.
- N 2f.
- N 5c. & d

Population and species distribution are unaffected by man and are in natural condition. No loss of wildlife solitude. Fish stocking is very low priority due to extremely low managed use level.

FIRE

- B 1. Expanded Suppression
- B 2. Immediate Suppression

Permit natural fires to burn under prescription. Suppress man caused fires immediately.

Equipment and suppression tactics will be selected to minimize adverse effects on wilderness values.

SOCIAL WILDERNESS COMPONENT

RECREATION

This prescription is designed to provide opportunities for a primitive experience featuring solitude, the chance to experience unmodified natural ecosystems, and to travel cross country in an environment where success or failure is directly dependent on ability, knowledge, and initiative. The opportunities provided will exemplify the most primitive end of the recreation opportunity spectrum including qualities of self reliance, physical and mental challenge, inspiration, and the unique experiences dependent upon a wilderness setting.

CAMPING

- M 1b. Unrestricted

Management emphasizes unrestricted camping with outstanding opportunities for isolation and solitude, free from evidence of man's activities and with very infrequent encounters with other visitors. Visitors are encouraged to camp away from lakes, streams, and trails, and to leave no trace of their camp. No campsite improvements are provided and improvised improvements are discouraged and dismantled.

CAMPFIRES

- M 1d. Unrestricted

Management emphasizes the unrestricted opportunity to utilize properly built campfires. Visitors are encouraged to use self contained stoves, especially near or above timberline. Information on how to build a low impact campfire is disseminated to users. Dead and down wood may be used for fires.

PRACTICES

GENERAL DIRECTION

SPECIES-SPECIFIC DIRECTION

DOGS/PETS

- M 1e. Restricted
- M 1f. Unrestricted

Management recognizes the opportunity for recreating in the Wilderness accompanied by one's dog. Visitors are requested to keep their dogs in sight, close by, and under control at all times. Visitors are encouraged to leave their pets at home. In areas of important wildlife values or to resolve major conflicts with dogs, dogs are prohibited.

PARTY SIZE

- M 1h. Restricted

The maximum number of people in one party is restricted to 10. The maximum number of horses in one party is restricted to 10. Visitors are encouraged to travel and camp in small parties. Large parties will be encouraged to visit non-wilderness areas or other areas of the Wilderness.

LEVEL OF USE

- M 1i. Inform visitors of alternatives
- Reduce Access
- Limit Use

Management emphasizes an outstanding opportunity for isolation and solitude with very infrequent encounters with other visitors. Established capacities will not be exceeded on more than 20 days/year. Maximum desirable encounters per day with other groups will be 1 encounter. If level of use exceeds capacity for more than 20 days/year, then actions are taken to reduce use. Visitors will be redirected to other areas of the wilderness, to other wilderness areas, and to non-wilderness areas. This will be accomplished by means of visitor information and education, manipulation of trails, signs, trail-heads, and access roads, and/or a permit system. A permit system may be utilized to maintain current use levels, or alter use patterns, or to reduce restrictions on public activities, within the Wilderness.

	Alpine	Montane	Foothills	Meadows
3-7 PAOT/ 1000 Acres		x	x	
1-2 PAOT/ 1000 Acres	x			x

PRESCRIPTION 25

PRACTICES

GENERAL DIRECTION

SPECIES-SPECIFIC DIRECTION

RECREATION LIVESTOCK

M 2b. Unrestricted

The use of recreational livestock in this prescription is unrestricted. Visitors are requested to keep their pack and saddle stock at least 300 feet from lakes and streams except for the purposes of watering and through travel. They are encouraged to carry cubed, pelleted or rolled feed, and to hobble, tie, or picket their animals in such a manner so the use of the forage is 25% or less and the use by livestock is not evident to the casual observer. In areas where horse use is causing physical or biological degradation or is creating undesirable non-system trail pack and saddle stock are prohibited.

LANDS

Outfitter-guide operations in this prescription are subjected to the same restrictions as the general public and as recreational livestock. In addition, their camps will be restricted to designated campsites. Outfitter-guide activities are kept at all times harmonious with the activities of visitors who do not employ such service. Outfitter-guide operations are included in the overall level of use capacities.

C 4a. Eliminate Special Use

C 4b. Maintain Special Use

C 4c. Issue Special Use

C 1a. Acquire Lands

Eliminate special uses where feasible by non-renewal. Maintain special use for non-conforming but accepted uses.

Issue special uses for research and scientific study. Acquire private inholdings.

TRANSPORTATION

I 1. No Road or Trail Construction

This prescription is designed to provide opportunities for cross-country travel utilizing a maximum degree of woodsmanship and primitive recreation skills in an environment which offers a high degree of risk and challenge. No trails are provided.

BRIDGES

M 3b.

No bridges constructed.

UNITED STATES DEPARTMENT OF AGRICULTURE—FOREST SERVICE
FOREST SUPERVISOR'S OFFICE AT FORT COLLINS, COLORADO
FOR
ARAPAHO AND ROOSEVELT NATIONAL FORESTS
AND PAWNEE NATIONAL GRASSLANDS
FEDERAL BUILDING-301 S. HOWES
P O BOX 1366
FORT COLLINS, COLORADO 80522

IN REPLY REFER TO

6140

March 3, 1980



Mr. Herbert Brantley
Department of Recreation and
Park Administration
Clemson University
Clemson, South Carolina 29631

Dear Herb:

Enclosed for your review is my paper, "A Blueprint for Monitoring and Evaluation" completed to satisfy the requirements for Clemson University's program on "Professional Development for the Outdoor Recreation Manager".

Sincerely,

GARY V. HODGES
Principal Staff Officer, Resources

Encl.

PRACTICES

GENERAL DIRECTION

SPECIES-SPECIFIC DIRECTION

SIGNS

M 4b.

No signs or route markers are permitted. Visitors are discouraged from marking travel routes.

FACILITIES

M 5b.

M 5c.

No facilities, structures, or non-conforming activities are permitted in this prescription except as legally required or permitted for special uses such as prospecting, mining, grazing or water storage and transmission.

VISUALS

K 1. Preservation

The area identified by the prescription will be managed for maximum retention of the natural landscape. All activities will be designed and implemented so that the impact of man is not apparent and the area appears in an untrammelled, natural succession condition.

A P P E N D I X

EXHIBIT II

MINIMUM MONITORING REQUIREMENTS

MANAGEMENT PRESCRIPTION #21

FOR

TRANSITION AREAS

MANAGEMENT PRESCRIPTION #21

This prescription provides for transition management areas in Wilderness which emphasizes moderate wilderness use consistent with preserving biophysical wilderness resources near major developed recreation areas adjacent to the Wilderness.

This prescription applies to:

- Transition management areas which have high historic levels and significant evidence of human use and occupation. Facilities and trails constructed for Level IV maintenance may be present in the area. Natural processes, particularly vegetation and the use of the area by wildlife, shows substantial short term interruption. Non-conforming but accepted uses may be present. Opportunity for solitude and primitive recreation limited or absent.

MINIMUM MONITORING AND EVALUATION REQUIREMENTS

Standard	Monitoring Requirement	Frequency	Method	Ongoing Reliability	Benchmark Requirement	Analysis	Documentation Requirements
VEGETATION							
Trail Side - Condition at least good on areas of high inherent productivity - no change in tread width beyond design prism.	<u>Trails</u> 1) Tread width veg. changes.	Every 3 yrs.	Trail Transect	Sufficient transects to insure 90% confidence in extrapolation to entire trail in zone.	Same transects/ initial reading	Correlate to use level, type, & past use. Compare with benchmark condition.	Annual Report showing change. Evaluation report due every 3 years.
General Range Condition - < 25% utilization, "good" condition of meadows and lakeshores.							
Campsites - Ground cover veg. loss < 75% no sites in condition Class 5. No unnatural pruning of trees.	<u>Campsites</u> 2) erosion ground cover, tree condition (firewood available).	Annually for 3 yrs. all sites closed to use. Annually - all designated campsites.	Code-a-Site	Indicator sites ranging in elevation, soil type, veg. type, condition class. (approx. 30 sites) Evaluate every 3 yrs.	Baseline sites ranging in elevation, soil type, veg. type. Located in unused areas in Prescr. 24 & 25.	Correlate to use level, type, & benchmark condition.	Annual Report for designated sites. Evaluation Report due at end of 3 yrs. from application of prescription.

SOILS

Trails - Soil loss within natural limits except on designed prism.
Campsites - No sites in condition Class 5.
General Range Condition - Soil not in downward trend.

3) condition, trend, composition

5 yrs. in meadows & lakeshores.

Range Environmental Analysis Handbook (ocular estimate & height/weight curves.

70% confidence that indicator sites are representative.

Existing range plots and exclosures.

Correlate to use level, Annual Report type, & benchmark condition. every 5th year.

WATER QUALITY

Bacteriological & Biological -- no deviation from State standards.
Chemical -- no deviation from State standards.
Physical -- no deviation from State standards.

4) Bacteriological-Biological, Chemical, & Physical

Establish benchmark within 1st time period. Freq. depends on sample variables. Minimum of 5 yrs. between studies.

State of the art hydrological field sampling techniques & standard methods for data analysis.

90% confidence level.

Establish profile for each major stream in zone by use pattern. Monitoring of lakes should be stratified by: Geol. type, Elevation, Depth, Size, & Level of Rec. Use.

Acquire reservoir operator water quality data.

Data will be analyzed to determine statistical relationship and possible pollution sources & identification of best mgmt. practices. Result in Annual Report. Data to be stored in national "storet" system. Evaluation report every 5 years.

AIR QUALITY

Class I Areas - no degradation of existing air clarity.
Other Areas - not to exceed State standards (State Implementation Plan)

5) Visual Clarity

Establish benchmark within 1st time period.

Photo record from established photo points using Kodak color separation guide.

All major vistas in zone on National Forest System trails.

Result in permanent 2120 file. Copy to Regional Office.

VISITOR USE LEVEL AND PATTERN OF USAGE

Level of Use: .63 - 2.5 RVD/acre (.63 - 1.9 RVD/acre, 63 - 190 RVD/acre/season).

Day Use: > 50% of all use.

6) Visitor Use

Benchmark within 1 yr. of designation & every 5 yrs.

Trail Registration, Trail Counter, Visual Double Sample, Traffic Counter

90% Level of confidence.

Utilize latest research technique.

Total use activity, original size, no. of groups, destination, travel route, mode of travel, entry point (FNMW Computer Analysis)

Annual Report containing evaluation.

Annual

Traffic Counter, Regression Formulas, Indicator Trail Registration, & Trail Counter Analysis

70% Level of confidence.

Determine if Annual RIM use level meets standard. Annual RIM Report.

VISITOR SATISFACTION

Skill level, expectations and activities of 2/3 of visitors are compatible with management directions for zone.

7) (Characteristics of visitors
Visitor satisfaction with zone management direction.
Emerging issues.

When Informal contacts indicate dissatisfaction, change in user characteristics or emerging issues.

Informal visitor contacts by Wilderness employees. Participant survey using structured rangers interview log.

Quality & quantity of information on satisfaction and emerging issues is adequate to meet public input needs for planning.

Formal research.

Past university and Forest System research (Rawah Study, Indian Peaks Study, Comanche Peak Study).

Analysis utilizing accepted public input analysis.

Annual Report contains evaluation. Formal research publication.

A P P E N D I X

EXHIBIT III

GLOSSARY OF TERMS

FSM 1920.5 Definitions (excerpt)

1920.5 - DEFINITIONS. The following definitions are applicable to all land and resource management planning in the Forest Service.

219.3 Definitions.

For purposes of this subpart the following words shall have these meanings:

(a) "Allowable sale quantity": The quantity of timber that may be sold from the area of land covered by the forest plan for a time period specified by the plan. This quantity is usually expressed on an annual basis as the average annual allowable sale quantity.

(b) "Assessment": The Renewable Resource Assessment required by the RPA.

(c) "Base timber harvest schedule": The Timber Harvest Schedule in which the planned sale and harvest for the preceding decade of the planning period and this planned sale and harvest for the preceding decade of the planning period and this planned sale and harvest for any decade is not greater than long-term sustained yield capacity.

(d) "Biological growth potential": The average net growth attainable in a fully stocked natural area of forest land.

(e) "Capability": The potential of an area of land to produce resources, supply goods and services, and allow resource uses under an assumed set of management practices and at a given intensity. Capability depends upon current conditions and site conditions such as climate, slope, landform, soils and geology, as well as the application of management practices, such as silviculture or protection from fire, insects and disease.

(f) "Corridor": A linear strip of land which has ecological, technical, economic, social, or similar advantages over other areas for the present or future location of rights-of-way within its boundaries.

(g) "Diversity": The distribution and abundance of different plant and animal communities and species within the area covered by a land and resource management plan.

(h) "Economic efficiency analysis": A comparison of the values of resource inputs (costs) required for a possible course of action with the values of resource outputs (benefits) resulting from such action. In this analysis, incremental market and nonmarket benefits are compared with investment and physical resource inputs.

(i) "Environmental analysis": An analysis of alternative actions and their predictable short- and long-term environmental effects, which include physical, biological, economic, social, and environmental design factors and their interactions. Environmental

assessment is the concise public document required by the regulations for implementing the procedural requirements of NEPA, (40 CFR 1508.9).

(j) "Environmental documents": A set of concise documents to include, as applicable, the environmental assessment, environmental impact statement, finding of no significant impact, or notice of intent.

(k) "Even-aged silviculture": The combination of actions that results in the creation of stands in which trees of essentially the same age grow together. Managed even-aged forests are characterized by a distribution of stands of varying ages (and therefore tree sizes) throughout the forest area. Regeneration in a particular stand is obtained during a short period at or near the time that the stand has reached the desired age or size and is harvested. Clearcutting, shelterwood cutting, seed tree cutting, and their many variations are the cutting methods used to harvest the existing stand and regenerate a new one. In even-aged stands, thinning, weeding, clearings, and other cultural treatments between regeneration cuts are often beneficial. Cutting is normally regulated by scheduling the area of harvest cutting to provide for a forest that contains stands having a planned distribution of age classes.

(l) "Goal": A concise statement of the state or condition that a land and resource management plan is designed to achieve. A goal is usually not quantifiable and may not have a specific date for completion.

(m) "Goods and services": The various outputs produced by forest and rangeland renewable resources. The tangible and intangible values of which are expressed in market and nonmarket terms.

(n) "Guideline": An indication or outline of policy or conduct.

(o) "Integrated pest management": A process in which all aspects of a pest host system are studied and weighed to provide the resource manager with information for decisionmaking. Integrated pest management is, therefore, a part of forest or resource management. The information provided includes the impact of the unregulated pest population on various resources values, alternative regulatory tactics and strategies, and benefit/cost estimates for these alternative strategies. Regulatory strategies are based on sound silvicultural practices based on sound silvicultural practices and ecology of the pest-host system. Strategies consist of a combination of tactics such as stand improvement plus selected use of pesticides. The overriding principle in the choice of strategy is that it is ecologically compatible or acceptable.

(p) "Long-term sustained yield capacity": The highest uniform wood yield from lands being managed for timber production that may be sustained under a specified intensity of management consistent with multiple-use objectives.

(q) "Management concern": An issue or problem requiring resolution, or condition constraining management practices identified by the interdisciplinary team.

(r) "Management direction": A statement of multiple-use and other goals and objectives, the management prescriptions, and the associated standards and guidelines for attaining them.

(s) "Management intensity": The relative cost of a possible management direction and/or management practice.

(t) "Management practice": A specific action, measure, or treatment.

(u) "Management prescription": Management practices selected and scheduled for application on a specific area to attain multiple-use and other goals and objectives.

(v) "Multiple use": "The management of all the various renewable surface resources of the national forests so that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some lands will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output." (16 U.S.C. 531(a)).

(w) "Objective": A specific statement of measurable results to be achieved within a stated time period. Objectives reflect alternative mixes of all outputs or achievements which can be attained at a given budget level. Objectives may be expressed as a range of outputs.

(x) "Planning area": The area covered by a regional or Forest Plan.

(y) "Policy": A guiding principle upon which is based a specific decision or set of decisions.

(z) "Program": The Renewable Resource Program required by the EPA.

(aa) "Public issue": A subject or question of widespread public interest relating to management of

National Forest System lands identified through public participation.

(bb) "Public participation activities": Meetings, conferences, seminars, workshops, tours, written comments, response to survey questionnaires, and similar activities designed and held to obtain comments from the general public and specific publics about National Forest System land management planning.

(cc) "Real dollar value": A value from which the effect of change in the purchasing power of the dollar has been removed.

(dd) "Responsible official": The Forest Service employee who has been delegated the authority to carry out a specific planning action.

(ee) "Silvicultural system": A combination of interrelated actions whereby forests are tended, harvested, and replaced. The combination of management practices used to manipulate the vegetation results in forests of distinctive form and character, and this determines the combination of multiple resource benefits that can be obtained. Systems are classified as even-aged and uneven-aged.

(ff) "Standards": A principle requiring a specific level of attainment, a rule to measure against.

(gg) "Suitability": The appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of the economic and environmental consequences and the alternative uses foregone. A unit of land may be suitable for a variety of individual or combined management practices.

(hh) "Sustained-yield of the several products and services": The achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the national forest without impairment of the productivity of the land." (16 U.S.C. 531(b))

(ii) "Timber harvest schedule": The quantity of timber planned for sale and harvest, by time period, from the area of land covered by the forest plan. The first period, usually a decade, of the selected harvest schedule provides the allowable sale quantity. Future periods are shown to establish that sustained yield will be achieved and maintained.

(jj) "Timber production": The growing, tending, harvesting and regeneration of regulated crops of industrial wood. Industrial wood includes logs, bolts or other round sections cut from trees for industrial or consumer use, except fuelwood.

(kk) "Uneven-aged silviculture": The combination of actions that result in the creation of forests in which trees of several or many ages may grow together. Managed uneven-aged forests may take

several forms depending upon the particular cutting methods used. In some cases, the forest is essentially similar throughout, with individual trees of many ages and sizes growing in close association. In other cases, small groups of trees of similar age may be intermingled with similar groups of different ages; although the groups are even-aged, they are not recorded separately. Finally, an uneven-aged forest may contain two or three distinct age classes on the same area, creating a storied forest. Under uneven-aged silviculture, regeneration is obtained several or many times during the period required to grow an individual tree to maturity. Single-tree selection cutting, and other forms of partial cutting are used to harvest trees, obtain regeneration, and provide appropriate intermediate culture. Cutting is usually regulated by specifying the number or proportion of trees of particular sizes to retain within each area, thereby maintaining a planned distribution of size classes. Scheduling by area harvest is often used as well.

A P P E N D I X

EXHIBIT IV

BIBLIOGRAPHY

APPENDIX

EXHIBIT IV

BIBLIOGRAPHY

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A P P E N D I X

EXHIBIT V

EXCERPT FSM 1920 DRAFT

1922.26 Monitoring and Evaluation

Section 219.11

(i) Monitoring and evaluation. Monitoring and evaluation of planned actions and effects will be carried out in compliance with section 219.5(k) and paragraphs (i)(1) through (3) of this section. In addition, management practices associated with each of the resources planned will be evaluated with reference to the standards and guidelines contained in the forest plan through monitoring on an appropriate sample basis. Methods used to monitor consequences of activities resulting from planning and management practices will be consistent with those used to gather data and information.

(1) Monitoring requirements in the forest plan will include descriptions of:

(i) Activities, practices and effects that will be measured and the frequency of measurements;

(ii) Expected precision and reliability of the monitoring process; and

(iii) The time at which evaluation reports will be prepared.

(2) An evaluation report will be prepared for management practices monitored and will contain at least the following:

(i) A quantitative estimate of performance comparing outputs and services with those projected by the forest plan;

(ii) Documentation of measured effects, including any change in productivity of the land;

(iii) Recommendations for changes;

(iv) A list of needs for continuing evaluation of management systems and for alternative methods of management; and

(v) Unit costs associated with carrying out the planned activities as compared with unit costs estimated in the forest plan.

(3) Based upon the evaluation reports, the interdisciplinary team will recommend to the forest supervisor such changes in management direction, revisions, or amendments to the forest plan as deemed necessary.

(i) Monitoring will ensure as a minimum that:

(1) Lands are adequately restocked as specified in the forest plan;

(2) Lands identified as not suited for timber production will be examined at least every 10 years to determine if they have become suitable; if determined suited, such lands will be returned to timber production.

(3) Maximum size limits for harvest areas are evaluated to determine whether such size limits should be continued; and

(4) Destructive insects and disease organisms do not increase following management activities.

for identification of vicinity in the plan will be the management area.

It must be kept in mind that the Forest Plan is a working document. It will be used by District personnel to implement the direction established by the plan. It is therefore important that all the direction needed for operation, maintenance and protection is included in this section.

The resource or use opportunities to be emphasized with each management prescription will be identified along with a list of the activities to take place and the special standards and guidelines that apply to that prescription. The following format is suggested:

A. Narrative

(The desired future condition of the Management Area).

B. Proposed and Probable Practices

C. Standards and Guidelines

D. Monitoring actions

5. Monitoring Requirements

A. Introduction - A monitoring program will be established by the Forest plan. This will provide a basis for a periodic evaluation of the management practices. The results from this monitoring and evaluation will initiate the need for possible plan revision or amendment.

As a general requirement the plan will identify:

1. the actions, effects and resources to be measured and the frequency of measurements
2. expected precision and reliability of the monitoring process
3. the time when evaluation will be reported
4. methods used to monitor will be consistent with those used to gather data and information.

B. Minimum Requirements -

The following is a list of minimum items that must be considered for monitoring. Results of decision for major issues should be monitored in addition.

(1) Wildlife

1. population trends of management indicator species.
2. whether state wildlife objectives are being met.
3. measuring the diversity of plant and animal

communities.

4. Costs.

(2) Timber

1. whether lands are being adequately restocked.
2. availability of lands now considered unsuitable.
3. need to maintain current size limit on harvest areas.
4. destructive insects and disease organisms.
5. costs.

(3) Recreation

1. how ROS direction is being implemented.
2. whether direction meets expectations of visitors.

3. whether critical recreation resource attributes for each ROS class are being protected from degradation.

4. whether actual use compares with projections.

5. condition of developed sites.

6. costs.

(4) Visuals

- whether the condition of the visual resource is meeting the standards required in the plan.

- impacts on other resources.

(5) Transportation

- traffic

- road management

- road management protection

- costs

(6) Fire

- comparison of PARS with actual occurrence

(7) Range

- use and outputs

- range conditions

- trends

- supply

(8) Watershed

- surface and ground water quality and quantity

- soil productivity

- watershed conditions

- riparian ecosystems

- floodplains

- wetlands

- public health

6. References

7. Interdisciplinary Team

A P P E N D I X

EXHIBIT VI

NATIONAL FOREST MANAGEMENT ACT REGULATIONS
(Excerpt)

Federal Register

Monday
September 17, 1979

Part IV

Department of Agriculture

Forest Service

**National Forest System Land and
Resources Management Planning**
**(as corrected in the Federal Register
of September 19, 1979)**

- (2) Allowable Sale Quantity
- (3) 5 Year Restocking Requirement
- (4) Cultural Treatments Included in the Forest Plan
- (5) Decreasing Harvest Levels
- (6) Requirements for Even-Aged Management
- (7) No Harvest Where Such Treatment Would Favor an Abnormal Increase in Injurious Insects and Disease Organisms

Timber Production

219.3(jj) Definition

219.12(b) Identify Lands Available, Capable, and Suitable for Timber Production

- (1) Requirements of Timber Producing Lands
- (i) Not Legislatively or Administratively Withdrawn

(ii) Biological Growth Potential

(iii) Technology Available to Insure Timber Production Without Irreversible Resource Damage

(2) Determine Potential Economic Efficiency in Commercial Timber Production

(i) Direct Benefits

(ii) Direct Costs

(iii) Economic Efficiency Analysis

(3) Each Alternative Consider Relative Economic Efficiency

(4) Lands Tentatively Identified as Not Suited for Timber Production if:

(i) Land is Suitable for Uses That Preclude Timber Production

(ii) Silvicultural Standards and Guidelines Cannot Be Met

(iii) Lands are Not Cost Effective

(5) Considerations for the Allocation of Lands

Transition Period

219.16 Use of Existing Plans

Tree Species See Diversity

Uneven-Aged

219.3(kk) Uneven-Aged Silviculture Definition

Vegetation See Management

219.12(c) Choice of Vegetation Management Practice

219.13(e) Special Attention to Land and Vegetation Near Perennial Streams, Lakes and Other Bodies of Water (approximately 100 feet)

Water See Soil and Water

Wilderness

219.12(e) Criteria for Evaluation

219.12(f) Direction for the Management of Designated Wilderness and Primitive Areas

(1) Limiting and Distributing Visitor Use

(2) Control Measures

Wildlife See Fish and See Diversity

PART 219—PLANNING

Subpart A—National Forest System Land and Resource Management Planning

Sec.

219.1 Purpose.

219.2 Scope and Applicability.

219.3 Definitions.

219.4 Planning Levels.

219.5 Regional and Forest Planning Process.

219.6 Interdisciplinary Approach.

219.7 Public Participation.

219.8 Coordination of Public Planning Efforts.

219.9 Regional Planning Procedure.

219.10 Regional Planning Actions.

219.11 Forest Planning Procedure.

219.12 Forest Planning Actions.

219.13 Management Standards and Guidelines.

219.14 Research.

219.15 Revision of Regulations.

219.16 Transition Period.

Authority.—Secs. 6 and 15, 90 Stat. 2949, 2952, 2958 (16 U.S.C. 1604, 1613); and 5 U.S.C. 301.

Subpart A—National Forest System Land and Resource Management Planning

§ 219.1 Purpose.

(a) The regulations in this subpart set forth a process for developing, adopting, and revising land and resource management plans for the National Forest System. The purpose of the planning process is to meet the requirements of the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended (hereafter RPA) including procedures under the National Environmental Policy Act of 1969 (hereafter NEPA) for assessing economic, social, and environmental impacts. These regulations prescribe how land and resource management planning is to be conducted on National Forest System lands. The resulting plans will provide for multiple use and sustained yield of goods and services from the National Forest System.

(b) Plans guide all natural resource management activities and establish management standards and guidelines for the National Forest System. They determine resource management practices, harvesting levels and procedures under the principles of multiple use and sustained yield and the availability and suitability of lands for resource management. All levels of

planning will be based on the following principles:

(1) That the National Forests are ecosystems and their management for goods and services requires an awareness of the interrelationships among plants, animals, soil, water, air, and other environmental factors within such ecosystems. Proposed management will consider these interrelationships:

(2) Consideration of the relative values of all renewable resources, including the relationship of mineral resources to these renewable resources:

(3) Establishment of goals and objectives for the sustained yield of products and services resulting from multiple-use management without impairment of the productivity of the land:

(4) Protection and, where appropriate, improvement of the quality of renewable resources:

(5) Preservation of important historic, cultural and natural aspects of our national heritage:

(6) Protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise their traditional religions:

(7) Provision for the safe use and enjoyment of the forest resources by the public:

(8) Protection of all forest and rangeland resources from depredations by the forest pests, using ecologically compatible means:

(9) Coordination with the land and resource planning efforts of other Federal agencies, State and local governments, Indian tribes, and adjacent private landowners:

(10) A systematic, interdisciplinary approach to ensure coordination and integration of planning activities for multiple-use management:

(11) Early and frequent public participation:

(12) Establishment of quantitative and qualitative standards and guidelines for land and resource planning and management:

(13) Management of National Forest System lands in a manner that is sensitive to economic efficiency; and

(14) Responsiveness to changing conditions in the land and changing social and economic demands of the American people.

§ 219.7 Scope and applicability.

The regulations in this subpart apply to the lands and waters in the National Forest System. Planning requirements for managing special areas, such as wilderness, wild and scenic rivers, national recreation areas, and national trails, will be included in land and resource management planning pursuant to these regulations. Whenever the special area authorities require additional planning, those authorities will control in implementing the planning process under this subpart.

§ 219.3 Definitions.

For purposes of this subpart the following words shall have these meanings:

(a) "Allowable sale quantity": The quantity of timber that may be sold from the area of land covered by the forest plan for a time period specified by the plan. This quantity is usually expressed on an annual basis as the average annual allowable sale quantity.

(b) "Assessment": The Renewable Resource Assessment required by the RPA.

(c) "Base timber harvest schedule": The Timber Harvest Schedule in which the planned sale and harvest for any future decade is equal to or greater than the planned sale and harvest for the preceding decade of the planning period and this planned sale and harvest for any decade is not greater than long-term sustained yield capacity.

(d) "Biological growth potential": The average net growth attainable in a fully stocked natural area of forest land.

(e) "Capability": The potential of an area of land to produce resources, supply goods and services, and allow resource uses under an assumed set of management practices and at a given level of management intensity. Capability depends upon current conditions and site conditions such as climate, slope, landform, soils and geology, as well as the application of management practices such as silviculture or protection from fire, insects, and disease.

(f) "Corridor": A linear strip of land which has ecological, technical, economic, social, or similar advantages over other areas for the present or future location of transportation or utility rights-of-way within its boundaries.

(g) "Diversity": The distribution and abundance of different plant and animal communities and species within the area covered by a land and resource management plan.

(h) "Economic efficiency analysis": A comparison of the values of resource inputs (costs) required for a possible

resource outputs (benefits) resulting from such action. In this analysis, incremental market and nonmarket benefits are compared with investment and physical resource inputs.

(i) "Environmental analysis": An analysis of alternative actions and their predictable short- and long-term environmental effects, which include physical, biological, economic, social, and environmental design factors and their interactions. Environmental assessment is the concise public document required by the regulations for implementing the procedural requirements of NEPA, (40 CFR 1506.9).

(j) "Environmental documents": A set of concise documents to include, as applicable, the environmental assessment, environmental impact statement, finding of no significant impact, or notice of intent.

(k) "Even-aged silviculture": The combination of actions that results in the creation of stands in which trees of essentially the same age grow together. Managed even-aged forests are characterized by a distribution of stands of varying ages (and therefore tree sizes) throughout the forest area. Regeneration in a particular stand is obtained during a short period at or near the time that the stand has reached the desired age or size and is harvested. Clearcutting, shelterwood cutting, seed tree cutting, and their many variations are the cutting methods used to harvest the existing stand and regenerate a new one. In even-aged stands, thinning, weeding, cleanings, and other cultural treatments between regeneration cuts are often beneficial. Cutting is normally regulated by scheduling the area of harvest cutting to provide for a forest that contains stands having a planned distribution of age classes.

(l) "Goal": A concise statement of the state or condition that a land and resource management plan is designed to achieve. A goal is usually not quantifiable and may not have a specific date for completion.

(m) "Goods and services": The various outputs produced by forest and rangeland renewable resources. The tangible and intangible values of which are expressed in market and nonmarket terms.

(n) "Guideline": An indication or outline of policy or conduct.

(o) "Integrated pest management": A process in which all aspects of a pest-host system are studied and weighed to provide the resource manager with information for decisionmaking. Integrated pest management is, therefore, a part of forest or resource management. The information needed

pest population on various resources values, alternative regulatory tactics and strategies, and benefit/cost estimates for these alternative strategies. Regulatory strategies are based on sound silvicultural practices and ecology of the pest-host system. Strategies consist of a combination of tactics such as stand improvement plus selected use of pesticides. The overriding principle in the choice of strategy is that it is ecologically compatible or acceptable.

(p) "Long-term sustained yield capacity": The highest uniform wood yield from lands being managed for timber production that may be sustained under a specified intensity of management consistent with multiple-use objectives.

(q) "Management concern": An issue or problem requiring resolution, or condition constraining management practices identified by the interdisciplinary team.

(r) "Management direction": A statement of multiple-use and other goals and objectives, the management prescriptions, and the associated standards and guidelines for attaining them.

(s) "Management intensity": The relative cost of a possible management direction and/or management practice.

(t) "Management practice": A specific action, measure, or treatment.

(u) "Management prescription": Management practices selected and scheduled for application on a specific area to attain multiple-use and other goals and objectives.

(v) "Multiple use": "The management of all the various renewable surface resources of the national forests so that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some lands will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output." (16 U.S.C. 531(a))

(w) "Objective": A specific statement of measurable results to be achieved within a stated time period.

achievements which can be attained at a given budget level. Objectives may be expressed as a range of outputs.

(x) "Planning area": The area covered by a Regional or Forest Plan.

(y) "Policy": A guiding principle upon which is based a specific decision or set of decisions.

(z) "Program": The Renewable Resource Program required by the RPA.

(aa) "Public issue": A subject or question of widespread public interest relating to management of National Forest System lands identified through public participation.

(bb) "Public participation activities": Meetings, conferences, seminars, workshops, tours, written comments, response to survey questionnaires, and similar activities designed and held to obtain comments from the general public and specific publics about National Forest System land management planning.

(cc) "Real dollar value": A value from which the effect of change in the purchasing power of the dollar has been removed.

(dd) "Responsible official": The Forest Service employee who has been delegated the authority to carry out a specific planning action.

(ee) "Silvicultural system": A combination of interrelated actions whereby forests are tended, harvested, and replaced. The combination of management practices used to manipulate the vegetation results in forests of distinctive form and character, and this determines the combination of multiple resource benefits that can be obtained. Systems are classified as even-aged and uneven-aged.

(ff) "Standard": A principle requiring a specific level of attainment, a rule to measure against.

(gg) "Suitability": The appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of the economic and environmental consequences and the alternative uses foregone. A unit of land may be suitable for a variety of individual or combined management practices.

(hh) "Sustained-yield of the several products and services": "The achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the national forest without impairment of the productivity of the land." (16 U.S.C. 531(b))

(ii) "Timber harvest": The removal of

harvest schedule provides the allowable sale quantity. Future periods are shown to establish that sustained yield will be achieved and maintained.

(jj) "Timber production": The growing, tending, harvesting and regeneration of regulated crops of industrial wood. Industrial wood includes logs, bolts or other round sections cut from trees for industrial or consumer use, except fuelwood.

(kk) "Uneven-aged silviculture": The combination of actions that result in the creation of forests in which trees of several or many ages may grow together. Managed uneven-aged forests may take several forms depending upon the particular cutting methods used. In some cases, the forest is essentially similar throughout, with individual trees of many ages and sizes growing in close association. In other cases, small groups of trees of similar age may be intermingled with similar groups of different ages; although the groups are even aged, they are not recorded separately. Finally, an uneven-aged forest may contain two or three distinct age classes on the same area, creating a storied forest. Under uneven-aged silviculture, regeneration is obtained several or many times during the period required to grow an individual tree to maturity. Single-tree selection cutting, group selection cutting, and other forms of partial cutting are used to harvest trees, obtain regeneration, and provide appropriate intermediate culture. Cutting is usually regulated by specifying the number or proportion of trees of particular sizes to retain within each area, thereby maintaining a planned distribution of size classes. Scheduling by area harvest is often used as well.

§ 219.4 Planning levels.

(a) The planning process requires a continuous flow of information and management direction among the three Forest Service administrative levels: national, regional, and designated forest planning area. Management direction will be based principally upon locally derived information about production capabilities; reflect conditions and circumstances observed at all levels; and become increasingly specific as planning progresses from the national to regional level, and from the regional to designated forest planning area. In this structure, regional planning is the principal process for conveying management direction from the national level to designated forest planning areas and for conveying information from such

Service, will develop the Assessment which will include an analysis of present and anticipated uses, demand for, and supply of the renewable resources of forest, range, and other associated lands with consideration, and an emphasis on, pertinent supply and demand and price relationship trends; an inventory of present and potential renewable resources and an evaluation of opportunities for improving their yield of tangible and intangible goods and services, together with estimates of investment costs and direct and indirect returns to the Federal Government; a description of Forest Service programs and responsibilities in research, cooperative programs, and management of the National Forest System; and analysis of important policy issues and consideration of laws, regulations, and other factors expected to influence and affect significantly the use, ownership, and management of forest, range, and other associated lands. This assessment will be based on the future capabilities for each forest and regional planning area. Based on the Assessment which will include information generated during the regional and forest planning process, the Chief will develop alternative Programs. In formulating those alternatives the costs of supply and the relative values of both market and nonmarket outputs will be considered. The alternatives will include national renewable resource goals, quantified objectives, resource outputs and represent a range of expenditure levels sufficient to demonstrate full opportunities for management. A portion of each national goal and objective, expressed in the selected Program as a range of outputs, will be assigned to each region and be incorporated into each regional plan. The objectives assigned to each region will be based on local supply capabilities and market conditions. Economic efficiency and potential environmental effects will be considered in these assignments.

(2) *Regional.* Each regional forester will develop a regional plan in accordance with the procedures, standards, and guidelines specified in this subpart. The required planning process is established in § 219.5. Procedural requirements for regional plans are established in §§ 219.9 and 219.10, and resource management standards and guidelines are set forth in § 219.13. The regional planning process will respond to and incorporate the

socio-economic assessments, potential environmental effects, economic efficiency criteria, community stability objectives, and resource management standards and guidelines which have been established by the planning process. The regional forester may request adjustment of assigned regional objectives prior to their incorporation into the plan. Any adjustment will require the approval of the Chief, Forest Service.

(3) *Forest.* Forest plans will be developed for all lands in the National Forest System in accordance with the procedures, standards, and guidelines specified in this subpart. The planning process is established in § 219.5, and procedures are set forth in §§ 219.11 and 219.12. Resource management standards and guidelines are established in § 219.13. One forest plan may be prepared for all lands for which a forest supervisor has responsibility, or separate forest plans may be prepared for each national forest, or combination of national forests, within the jurisdiction of a single forest supervisor. These forest plans will constitute the land and resource management plans developed in accordance with §§ 8 and 13 of the RPA, as amended, and will include all management planning for resources. Forest plans will address the goals and objectives established by the regional plan. The objectives assigned to each forest will be evaluated in order to assure that they are compatible with local supply and demand, economic efficiency, community stability, and potential environmental effects. Based upon this evaluation, the forest supervisor may request adjustment of assigned objectives prior to their incorporation into the forest plan. Any such adjustment requires the approval of the regional forester.

§ 219.5 Regional and Forest Planning Process.

(a) *General planning approach.* The NEPA environmental analysis process will be included in the process for development of a regional or forest plan. Except where the planning process requires additional action, a single process will be used to meet the planning requirements and the NEPA process. The planning process adapts to changing conditions by identifying public issues, management concerns, and use and development opportunities. It consists of a systematic set of interrelated actions which

action as additional information becomes available.

(b) *Identification of issues, concerns, and opportunities.* The interdisciplinary team will identify and evaluate public issues, management concerns, and resource use and development opportunities, including those identified through public participation activities and coordination with other Federal agencies, State and local governments, and Indian tribes throughout the planning process. All public issues and management concerns are investigated and evaluated in order of their apparent importance. The responsible official will determine the major public issues, management concerns, and use and development opportunities to be addressed in the planning process.

(c) *Planning criteria.* Criteria will be prepared to guide the planning process and management direction. Process criteria may apply to collection and use of inventory data and information, analysis of the management situation, and the design and formulation of alternatives. Decision criteria will be developed and used to evaluate alternatives and to select one alternative to serve as the proposed plan. All criteria, including any revisions, will be developed by the interdisciplinary team and approved by the responsible official. Generally, criteria will be based on:

- (1) Laws, executive orders, regulations, and Forest Service Manual policy;
 - (2) Goals and objectives in the Program and regional plans;
 - (3) Recommendations and assumptions developed from public issues, management concerns, and resource use and development opportunities;
 - (4) The plans and programs of other Federal agencies, State and local governments and Indian tribes;
 - (5) Ecological, technical and economic factors;
 - (6) Guidelines for economic analysis practices, including standards for benefits and costs, and the discount rate of interest will be established by the Chief, Forest Service, and become effective within one year after final publication of these planning rules in the Federal Register; and
 - (7) The resource management standards and guidelines in § 219.13.
- (d) *Inventory data and information collection.* Each responsible official will

interdisciplinary team will collect, assemble, and use data, maps, graphic material, and explanatory aids, of a kind, character, and quality, and to the detail appropriate for the management decisions to be made. Existing data will be used in planning unless such data is inadequate. Data and information needs may vary as planning problems develop from identification of public issues, management concerns, and resource use and development opportunities. Acquisitions of new data and information will be scheduled and planned as needed. Methods used to gather data will be consistent with those used to monitor consequences of activities resulting from planning and management. Data will be stored for ready retrieval and comparison and periodically will be evaluated for accuracy and effectiveness. Common data definitions and standards to assure uniformity of information between all planning levels will be established by the Chief, Forest Service. As information is recorded using common data definitions and standards, it will be applied in any subsequent planning process. Information developed from common data definitions and standards will be used in the preparation of the 1990, and subsequent Assessments and Programs.

(e) *Analysis of the management situation.* The analysis of the management situation is a determination of the ability of the planning area covered by the Regional or Forest Plan to supply goods and services in response to society's demand for those goods and services. The analysis will display the capability to supply outputs and uses, and projected demands for the outputs or uses over time. It will identify any special conditions or situations which involve hazards to the resources of the planning area and their relationship to proposed and possible actions being considered. The analysis will determine:

- (1) Ranges of various goods, services and uses that are feasible under existing conditions at various levels of management intensity;
- (2) Projections of demand, using best available techniques, with both price and non-price information which, in conjunction with supply cost information, will be used to evaluate the level of goods and services that maximizes net public benefits; to the extent possible, demand will be assessed in a quantity relationship; to resolve public issues and concerns; economic, and ability of providing services, and uses